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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,606	09/05/2003	Bruno Devos	BOCK-06/119	8003
26875	7590	01/11/2006	EXAMINER	
WOOD, HERRON & EVANS, LLP 2700 CAREW TOWER 441 VINE STREET CINCINNATI, OH 45202			MOON, SEOKYUN	
			ART UNIT	PAPER NUMBER
			2675	

DATE MAILED: 01/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/656,606		DEVOS ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Seokyun Moon		2675	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on Sept 05, 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☒ Claim(s) 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>03/02/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Objections*

1. **Claim 12** is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claim 12 has not been further treated on the merits.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1, 2, and 5** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakamoto (U.S. Pat. No. 5,594,463, herein after referred to as "Sakamoto") in view of Sundahl (U.S. Pub. No. 2004/0027057 A1, herein after referred to as "Sundahl").

As to **claim 1**, Sakamoto [*fig. 1*] [*fig. 3*] [*col. 1: lines 56-60*] teaches a method for controlling an EL element display, said display comprising a plurality of EL elements ("*EL elements 14*" in [*fig. 1*] and "*EL elements 52*" in [*fig. 3*]) having an anode and a cathode, said EL element being arranged in a common anode configuration [*fig. 3: the anodes of the "EL elements" in each column line are connected to each other*], whereby said diodes [*fig. 1*] ("*EL elements 14*") co-operate with constant current sources

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(*"constant current sources 10"*) and are fed by means of a power supply (a component/part of the display device providing the *"source voltage (+V)"*), characterized in that a power voltage supply compensation [col. 2: lines 18-34] [fig. 1] is applied, in which a drop (*"V<sub>f</sub>"*) is measured across the EL element and wherein the measured voltage drop is used as an indicator [col. 1 lines 21-25] for the light output of the organic light emitting diodes and wherein said power supply is adjusted in function of said measured voltage drop.

Sakamoto fails to teach the EL elements of the display to be organic light-emitting diodes.

However, Sundahl [par. [0015]: lines 1-3] teaches a display device (*"OLED flat panel display"*) comprising organic light emitting diodes (*"OLEDs"*).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to specify or define Sakamoto's EL elements to be organic light-emitting diodes as taught by Sundahl [par. [0002]: lines 5-8] to reduce the operational voltage of the display device, to provide relatively high brightness, and to allow the display to emit difference colors of light.

The combined device of Sakamoto and Sundahl fails to teach the method comprising measuring the voltage drop across the current source.

At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to measure the voltage drop across the current source instead of measuring the voltage drop across the organic light-emitting diodes when the current source is connected to the organic light-emitting

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diodes in series and current source and diodes are terminated by a voltage source and ground as shown in [Sakamoto: fig. 1 and Appl. No. 10/656606: fig. 2] because applicant has not disclosed that measuring the voltage drop across the current source rather than measuring the voltage drop across the diode provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected applicant's invention to perform equally well with measuring the voltage drop across the organic light-emitting diodes because measuring the voltage drop across the current source is eventually to measure the voltage drop across the organic light emitting diode as disclosed by the applicant. (*Appl. No. 10/656606 - pg 13 lines 8-12*).

Therefore, it would have been an obvious matter of design choice to modify the combination device of Sakamoto and Sundahl to obtain the invention as specified in claim 1.

As to **claim 2**, Sakamoto [*col. 2 lines 2-12*] teaches the method characterized in the power supply is adjusted such that the controlling voltage which is supplied to the driving device, to have a predetermined voltage value.

The combined device of Sakamoto and Sundahl fails to teach the method characterized in adjusting the power supply such that the voltage at the cathode of each organic light emitting diode is greater than or equal to a predetermined threshold voltage.

At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to arrange the organic light-emitting

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diodes and the current source, as specified by the applicant [*fig. 2*] because the applicant has not disclosed that placing the diodes and the current source in such arrangement in a driving device for a display provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected applicant's invention to perform equally well with the arrangement of the components in a driving device for a display, as specified in Sakamoto [*fig. 1*].

Therefore, it would have been an obvious matter of design choice to modify the combination device of Sakamoto and Sundahl to obtain the invention as specified in claim 2.

The modified combination device of Sakamoto and Sundahl does not teach adjusting the power supply such that the voltage at the cathode of each organic light emitting diode is greater than or equal to a predetermined threshold voltage.

However, utilizing the controlling voltage which is supplied to the driving device for the power supply adjustment, as a factor to determine whether the power supply adjustment is needed or not is equivalent to utilizing the voltage across the EL element as the factor for determination since the controlling voltage is the factor to cause the change in the voltage values across the EL element in the modified combination device of Sakamoto and Sundahl.

Furthermore, it would have been an obvious matter of design choice to measure the voltage at the cathode of each organic light-emitting diode, which is equivalent to measuring the voltage across the current source, instead of measuring the voltage

across the organic light-emitting diode, as it has already been discussed with respect to the rejection of claim 1.

As to **claim 5**, Sakamoto [*fig. 5*] [*col. 7 lines 7-20*] teaches the method characterized in that the voltage drop is measured via analog-to-digital converters ("*A/D converter 72*").

4. **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakamoto and Sundahl as applied to claims 1, 2, and 5 above, and further in view of Kondakov et al. (U.S. Pub. No. 2004/0135749 A1, herein after referred to as "Kondakov").

Sakamoto fails to teach the power compensation to be performed periodically.

However, Kondakov [*par. [0009]* and *par. [0037] lines 1-3*] teaches a method of adjusting the voltage applied across the pixels of an OLED display to compensate for aging, periodically.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to teach Sakamoto to perform the power compensation periodically, as taught by Kondakov, to compensate degradation of the luminance of the EL element continuously while the display apparatus is in active.

5. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakamoto and Sundahl as applied to claims 1, 2, and 5 above, and further in view of Ishizuki et al. (U.S. Pub. No. 2003/0122813 A1, herein after referred to as "Ishizuki\_1").

Sakamoto fails to teach the method characterized in activating the organic light-emitting diodes in a predetermined sequence in order to measure the voltage drop.



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However, Ishizuki\_1 [*claim 1, 3<sup>rd</sup> paragraph* (“a current measuring part for... to each pixel;”)] teaches the method characterized in activating EL elements in a predetermined sequence (“said emitting elements to independently emit light in succession”) in order perform the power compensation (“drive voltage is adjusted”) [*abs. lines 3-13*].

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to teach Sakamoto to activate the organic light-emitting diodes in a predetermined sequence for power compensation, as taught by Ishizuku\_1 to simplify the operational procedure for power compensation when the power compensation is needed for multiple light-emitting diodes.

6. **Claims 6, 7, 8, 9, 10, and 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakamoto and Sundahl as applied to claims 1, 2, and 5 above, and further in view of Ishizuki et al. (U.S. Pub. No. 2003/0122813 A1, herein after referred to as “Ishizuki\_2”)

As to **claim 6**, Sakamoto fails to teach the method characterized in that at least a number of the measured values of voltage or voltage drop are stored in a storage device for interrogation.

However, Ishizuki\_2 [*claim 21*] teaches a method characterized in measuring a current value by fetching the value of current flowing in power line while causing emitting elements to emit light in succession and storing the measured current values in a memory.



It would have been obvious to one of ordinary skill in the art at the time of the invention to teach Sakamoto to measure the factor (such as “the voltage drop across the current source” for Sakamoto and “the current flowing in power line” for Ishizuki\_2) causing irregular luminance of display apparatus after long-time use and to store the factor in a memory, as taught by Ishizuki\_2, to obtain a broaden database for compensation, and thus to provide optimum power compensation to the display apparatus.

As to **claim 7**, Sakamoto fails to teach the method characterized in that one or more of the current sources each co-operate with a plurality of said organic light-emitting diodes, whereby the voltage drop across such current source is measured for each of the diodes coupled to the corresponding current source by sequentially actuating these diodes.

However, Ishizuki\_2 [*claim 2: 3<sup>rd</sup> par. (“a current measuring part for.... each assigned to each pixel; and”)*] teaches the method of measuring current values by fetching the values of currents flowing in power line while causing emitting elements to emit light in succession.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to actuate the diodes of the combined apparatus of Sakamoto and Sundahl sequentially to measure the factor (such as “the voltage drop across the current source” for Sakamoto and “the current flowing in power line” for Ishizuki\_2) causing irregular luminance of display apparatus after long-time use, for all the organic light-emitting diodes of the combined apparatus, in an organized and simplified way.

As to **claim 8**, Sakamoto fails to teach method characterized in that the organic light-emitting diodes of the display are divided in groups, each group having its own power supply regulation, whereby the above said measurement is carried out per group and the worst case value of the measurement is used for controlling the power supply of said group.

However, Ishizuki\_2 [*claim 2: 3<sup>rd</sup> par. ("a current measuring part for.... each assigned to each pixel; and") and claim 27*] teaches a number of emitting elements and a method comprising a number of measurements for the factor (such as "*the voltage drop across the current source*" for Sakamoto and "*the current flowing in power line*" for Ishizuki\_2) causing irregular luminance of display apparatus after long-time use for the elements and controlling the power supply ("*adjusting the voltage value of the drive voltage*") based on the worst case value of the measurement ("minimum measured current value").

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the method of Ishizuki\_2 measuring the factor causing irregular luminance of display apparatus after long-time use for all emitting elements and adjusting the voltage value of the drive voltage based on the worst case value of the measurement to overcome the defects of the all EL elements caused by long-time use.

As to **claims 9 and 10**, Sakamoto fails to teach the method characterized in that it is used in a large-screen application, said screen being composed of a plurality of display tiles, whereby said control is applied at least individually for each of the tiles and

each of the said tiles is composed of a plurality of modules and in that said control is applied individually for each of the modules.

It would have been obvious to one of ordinary skill in the art at the time of the invention to duplicate the display apparatus of the modified combined device of Sakamoto, Sundahl, and Ishizuki\_2 to provide optimized view achieved by the modified combined device for a large-screen.

Furthermore, the courts have held that a mere duplication of the components of the device is generally recognized as being within the level of ordinary skill in the art. St. Regis Paper Co. v. Bemis Co. Inc. 193 USPQ 8, 11 (7<sup>TH</sup> Cir. 1977).

As to **claim 11**, Sakamoto [col. 7 lines 51-61] teaches the method characterized in that a limit control is applied, whereby when a preset value of maximum power of the display ("*maximum value able to be set*") or for a module dissipation is obtained for a portion in particular for a tile, said method of controlling is interrupted.

### **Conclusion**

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seokyun Moon whose telephone number is (571) 272-5552. The examiner can normally be reached on Mon - Fri (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

2006/01/03  
Seokyun Moon



**KENT CHANG**  
**PRIMARY EXAMINER**